

## **CLEAN COPY OF AMENDED CLAIMS AFTER AMENDMENT**

### **CLAIMS**

1. A composition comprising at least one casein or fragment thereof, wherein the composition is operable to inhibit oxidation of lipids in oil-in-water or water-in-oil emulsions.
2. The composition of Claim 1, further comprising at least one sulfated polysaccharide.
3. The composition of Claim 2, further comprising the sulfated polysaccharide selected from the group consisting of: iota-carrageenan, kappa-carrageenan, lambda-carrageenan, chondroitin, heparin, dextran, and cyclodextrins, and combinations thereof.
4. The composition of Claim 1, further comprising a medium-chain triglyceride.
5. The composition of Claim 4, further comprising a medium-chain triglyceride selected from the group consisting of: caproic (C:6.0), caprylic (C:8.0), and capric (C:10.0) triglycerides , and any combinations thereof.
6. The composition of Claim 1, further comprising at least one non-reducing sugar or sugar polyol.
7. The composition of Claim 1, further comprising the casein or fragment thereof selected from the group consisting of: alpha-casein, beta-casein, kappa-casein, fragments thereof, and any combinations thereof.
8. The composition of Claim 1, wherein the casein or fragment thereof comprises a caprine casein or fragment thereof.
9. The composition of Claim 1, further comprising at least one phosphopeptide, glycopeptide, glyceride and combinations thereof.
10. The composition of Claim 9, further comprising a phosphopeptide having amounts of alpha.sub.s2.-casein greater than 15 percent of total casein and medium-chain triglycerides.
11. The composition of Claim 10, further comprising a caseinophosphopeptide.

12. The composition of Claim 11, wherein the caseinophosphopeptide comprises a caprine caseinophosphopeptide.
14. The composition of Claim 1, further comprising at least one ingredient selected from the group consisting of: alpha, beta, gamma or delta tocopherols, alpha, beta, gamma or delta tocotrienols, tocopherols, tocotrienols, beta-carotene, phospholipids, chitosan and combinations thereof.
15. The composition of Claim 1, further comprising at least one phospholipid selected from the group consisting of: egg yolk phospholipids, soybean phospholipids, and combinations thereof.
16. The composition of Claim 1, further comprising at least one ingredient selected from the group consisting of pH modifiers, chelating agents, polyphenols, modified starches, glycerides, fruit concentrate sweeteners, cocoa powder, Sucralose, and oil-soluble flavors, vitamins, nutraceutical actives, and pharmaceutical actives.
17. The composition of Claim 16, wherein the pH modifier comprises pH modifiers selected from the group consisting of: citric acid, ascorbic acid, gluconic acid, and combinations thereof.
18. The composition of Claim 16, wherein the chelating agent comprises citric acid.
20. The composition of Claim 16, wherein the polyphenols comprises the polyphenols derived from the fruit of *Solanum melongena*.
21. A composition comprising at least one polysaccharide complex, wherein the complexes are immiscible and wherein the composition imparts at least one function selected from the group consisting of: inhibiting oxidation of lipids in oil-in-water or water-in-oil emulsions, preventing bone mineral loss in a mammal, preventing hypercholesterolemia in a mammal, enhancing mineral absorption, reducing protein settling and sedimentation within a protein rich emulsion, improving creaminess, and reducing bitterness.
23. The composition of Claim 21, wherein the polysaccharide complex is selected from the group consisting of sulfated polysaccharides.

25. The composition of Claim 9, wherein the glyceride is selected from the group consisting of: enzymatically modified oils, fats, and fatty acids of mono-, di-, and tri-glycerides; lipolyzed modified oils, fats, and fatty acids of mono-, di-, and tri-glycerides; and combinations thereof.
27. The composition of Claim 16, wherein the fruit concentrate sweetener comprises: a blend of hydrolyzed starch having a dextrose equivalent (D.E.) of up to approximately 25; fruit juice or fruit syrup concentrate of at least approximately 40% soluble solids; and approximately 0% insoluble solids, wherein the starch, juice or concentrate and solids form a liquor having a dry weight composition of approximately 40 to approximately 65% complex carbohydrates, approximately 35 to approximately 55% simple sugars from the fruit juice or fruit syrup concentrate, and approximately 0 to approximately 5% nutritional components occurring naturally in the fruit juice or fruit syrup concentrate.
28. The composition of Claim 21, further comprising at least one ingredient selected from the group consisting of cocoa powder, pH modifiers, chelating agents, polyphenols, modified starches, glycerides, fruit concentrate sweeteners, Sucralose, and oil-soluble flavors, vitamins, nutraceutical actives, and pharmaceutical actives.
30. The composition of Claim 21, further comprising a calcium or magnesium salt, or combination thereof, the composition is operable to increase mineral absorption to prevent hypercholesterolemia in a mammal.
31. The composition of Claim 21, further comprising a calcium or magnesium salt, or combination thereof, the composition is operable to increase mineral absorption to prevent bone mineral loss in a mammal.
32. The composition of Claim 21, further comprising a calcium or magnesium salt or combination thereof; and an oil rich in Omega-3 products.
35. The composition of Claim 21, further comprising an edible oil selected from the group consisting of: vegetable oils including rice bran oil, flax, chia, hemp, castor, soybean, lesquerella, dehydrated castor oil, rich in Omega-3, or conjugated linoleic acid, animal

oils including fish, egg, poultry, and beef oils rich in Omega-3, conjugated linoleic acid, and combinations thereof.

36. The composition of Claim 21, further comprising a calcium or magnesium salt or combination thereof, the composition is present in a transparent beverage product.
37. The composition of Claim 21, further comprising a calcium or magnesium salt or combination thereof, the composition present in a cocoa product having improved creaminess, reduced bitterness, and reduced oxidation.
38. The composition of Claim 21, wherein the composition is present in a protein rich product having reduced protein settling and sedimentation.
39. The composition of Claim 21, further comprising high-methoxyl pectins or pectin alginates or combinations thereof.
42. A product comprising at least one casein or fragment thereof, wherein the composition imparts at least one function selected from the group consisting of inhibiting oxidation of lipids in oil-in-water or water-in-oil emulsions, preventing bone mineral loss in a mammal, and preventing hypercholesterolemia in a mammal.
43. The product of Claim 42, wherein the product is selected from the group consisting of: cocoa products, hypercholesterolemia preventatives, bone mineral loss preventatives, Omega-3-rich oil products, products having oil-soluble flavors, products having oil-soluble vitamins, nutraceuticals, or pharmaceuticals, protein rich products having reduced protein settling and sedimentation, transparent beverages, products containing vegetable oils including rice bran oil, flax, chia, hemp, castor, soybean, lesquerella, dehydrated castor oil, rich in Omega-3, or conjugated linoleic acid, animal oils including fish, egg, poultry, and beef oils rich in Omega-3, or conjugated linoleic acid, and combinations thereof.
44. The composition of Claim 1, wherein the emulsion thereof comprises either a water-in-oil microemulsion, water-in-oil nanoemulsion, oil-in-water microemulsion, or an oil-in-water nanoemulsion thereof.

45. The composition of Claim 21, wherein the emulsion thereof comprises either a water-in-oil microemulsion, water-in-oil nanoemulsion, oil-in-water microemulsion, or an oil-in-water nanoemulsion thereof.
46. The composition of Claim 21, wherein the polycationic complex is selected from the group consisting of chitosan.
47. The composition of Claim 21, wherein the polycationic complex is selected from the group consisting of trypsin-digested casein.
48. The composition of Claim 21, wherein the trypsin-digested casein is selected from the group consisting of caprine casein characterized by a content of alpha.sub.s2.-casein greater than 15 percent and beta-casein greater than 15 percent of the total casein.
49. The composition of Claim 21, wherein the casein is selected from the group consisting of caprine casein phosphopeptides.
50. The composition of Claim 28, wherein the polyphenols comprises polyphenols selected from the group consisting of *Solanum melongena* polyphenols.
51. The composition of Claim 21, further comprising non-reducing sugars and sugar polyols.
52. The composition of Claim 21, further comprising pH modifiers wherein the acidic environment ranges from pH 2.0 to 5.7.
53. The composition of Claim 23, wherein the sulfated polysaccharides are selected from the group consisting of carrageenans, chondroitin, heparin, dextran, cyclodextrins and combinations thereof.